

Fig. 1

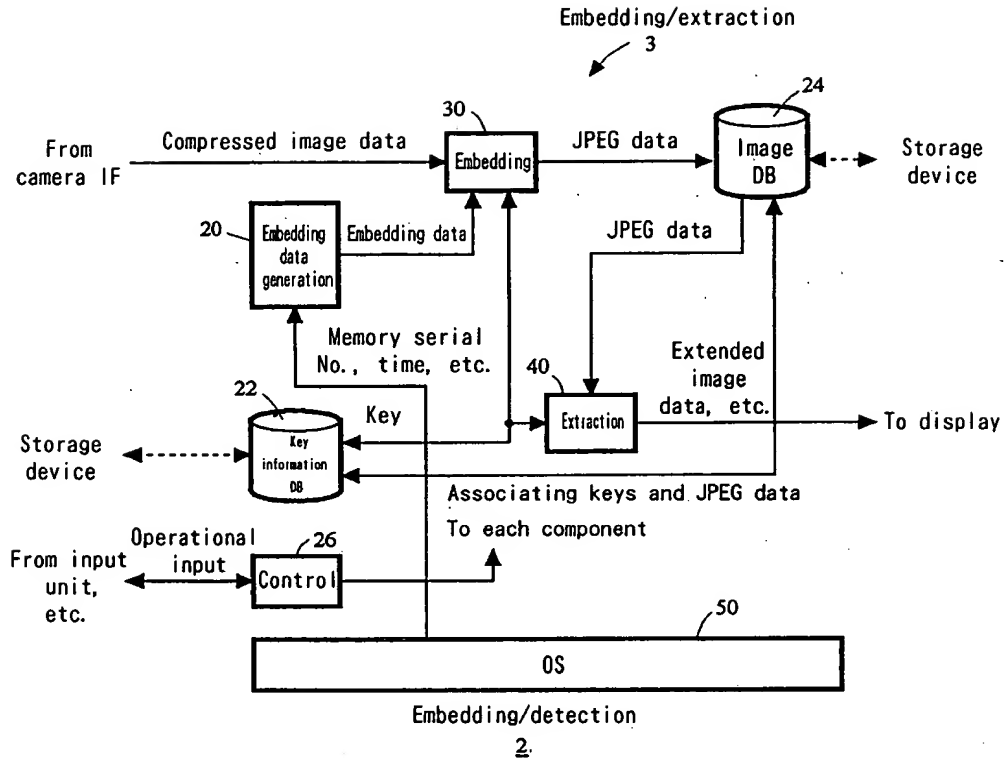


Fig. 2

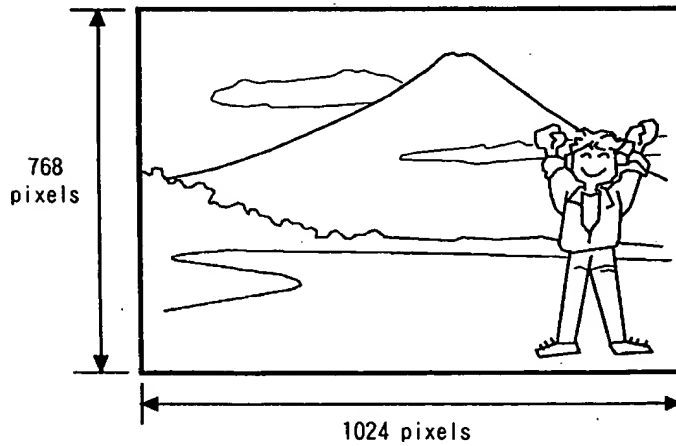


Fig. 5

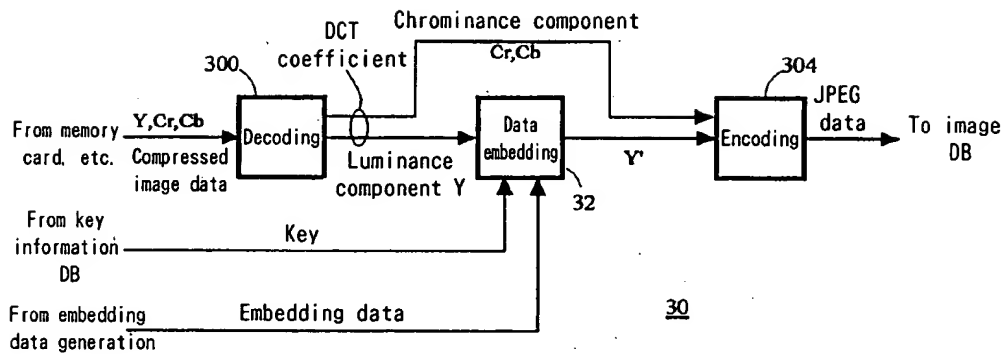


Fig. 3

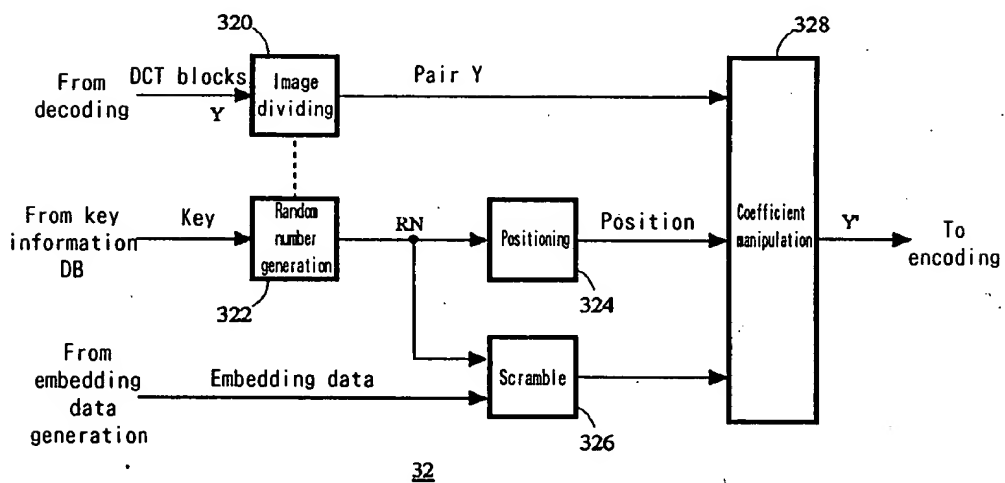


Fig. 4

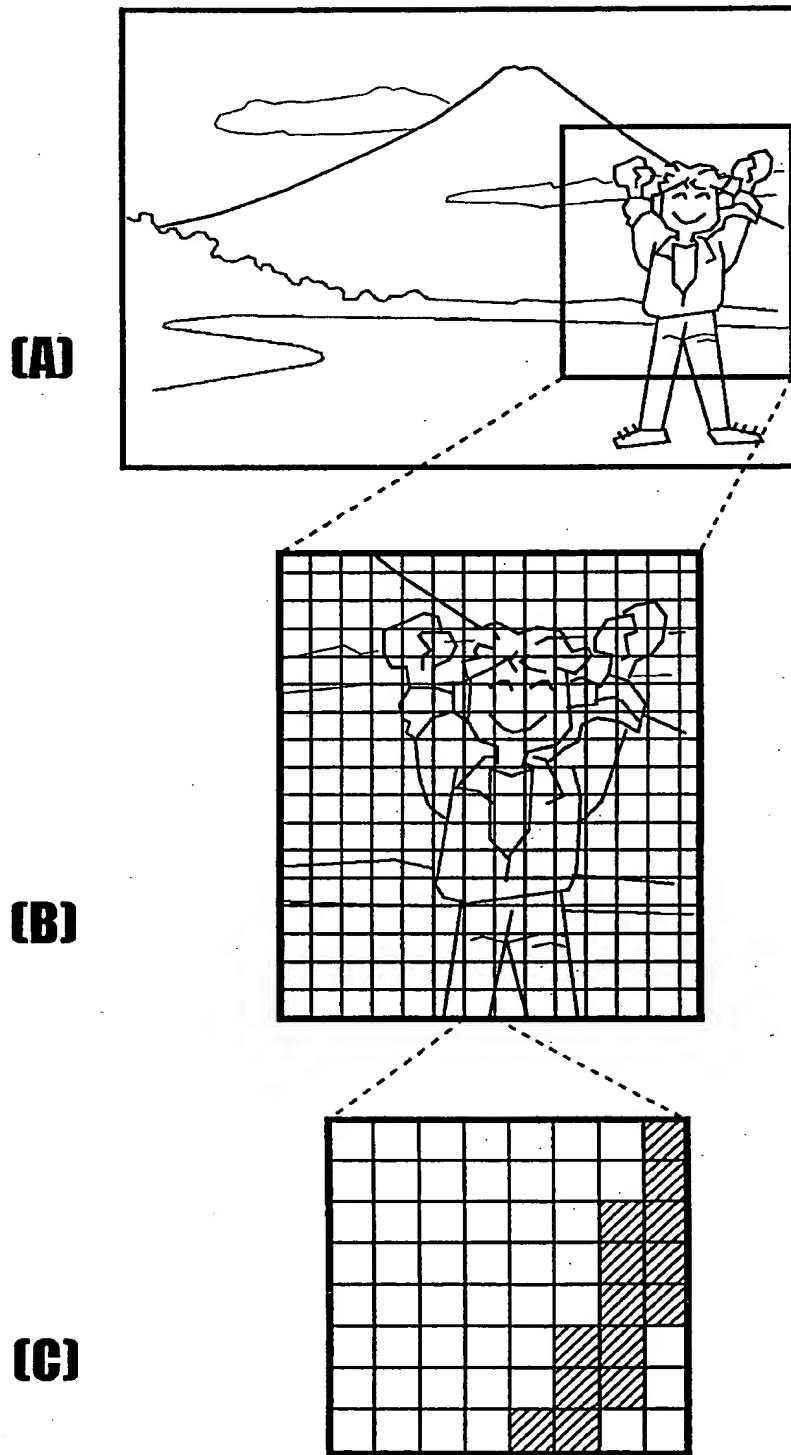


Fig. 6

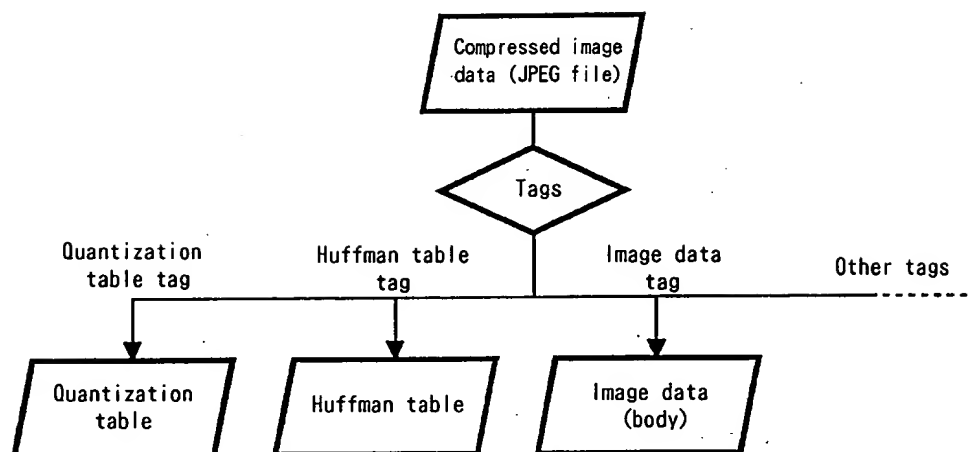


Fig. 7

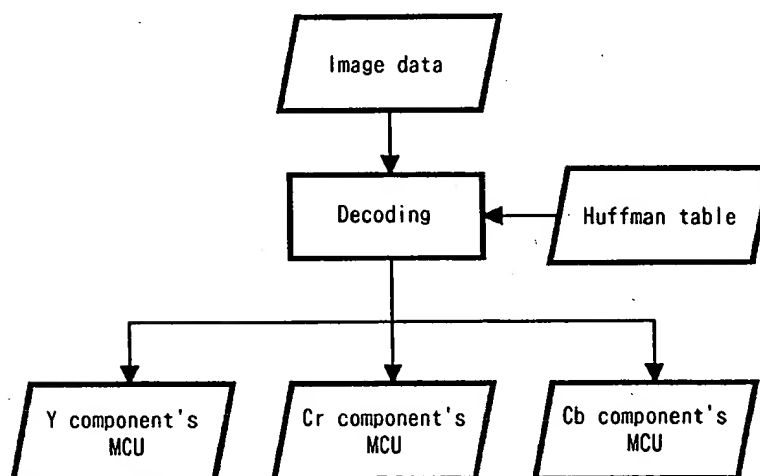


Fig. 8

Diagram illustrating the layout of a 1024x768 pixel image divided into DCT blocks. The image is 1024 pixels wide and 768 pixels high. The diagram shows a grid of DCT blocks, with labels for the first and last blocks in the first and last rows and columns. The top-left block is labeled 1,1 and 1,2. The top-right block is labeled 1,127 and 1,128. The bottom-left block is labeled 95,1 and 95,2. The bottom-right block is labeled 95,127 and 95,128. The diagram shows a grid of 16x16 DCT blocks, with the first and last blocks in each row and column labeled.

Diagram illustrating a 4x4 grid of DCT blocks, grouped into four 2x2 blocks (Block 1, Block 2, Block 3, Block 4). The grid is divided into four quadrants, each labeled as a "DCT block pair". The top-left quadrant (Block 1) contains pairs 1, 65, 129, and 130. The top-right quadrant (Block 2) contains pairs 2, 66, 131, and 132. The bottom-left quadrant (Block 3) contains pairs 3, 67, 133, and 134. The bottom-right quadrant (Block 4) contains pairs 4, 68, 135, and 136. A "DCT block" label is shown above the top-left quadrant, and a "DCT block pair" label is shown above the top-right quadrant. A "Y" label is shown to the left of the top-left quadrant.

Pair1	Pair2	...	Pair64
Pair65			
⋮	⋮		⋮
Pair6081	Pair6082	...	Pair6144

Pair

Fig. 9

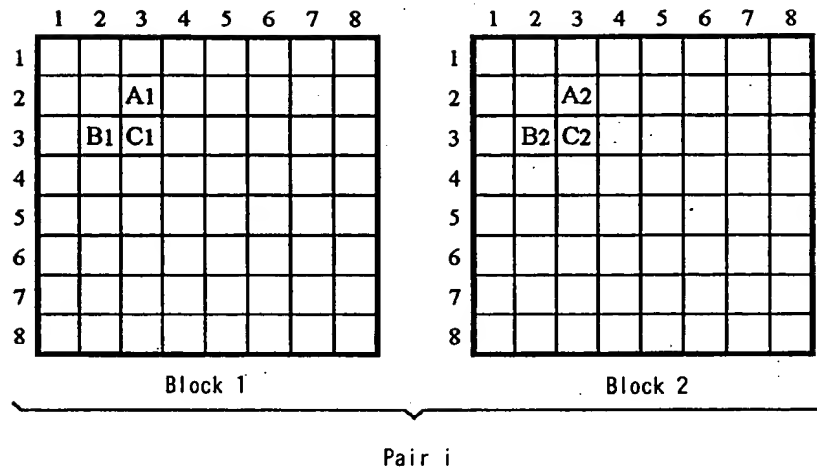


Fig. 10

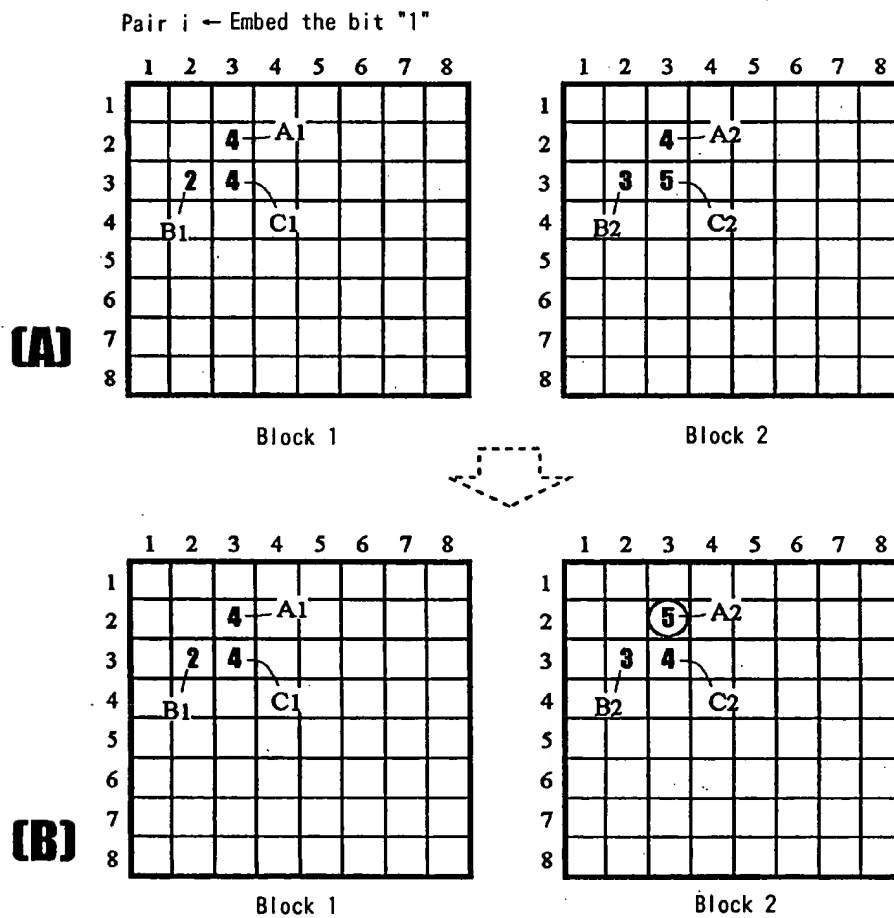


Fig. 11

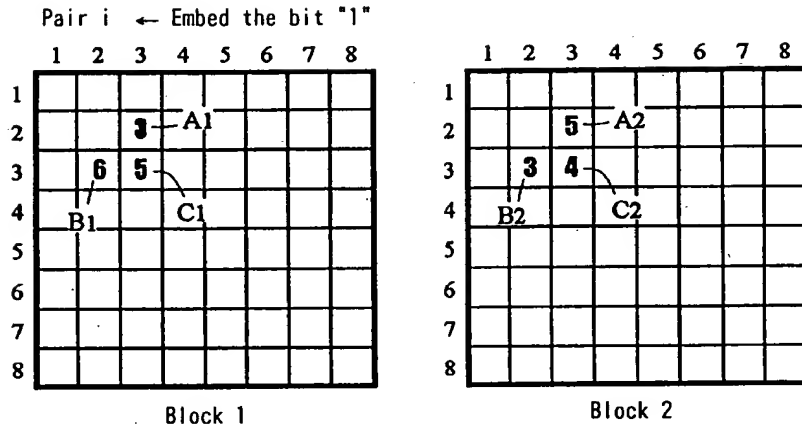


Fig. 12

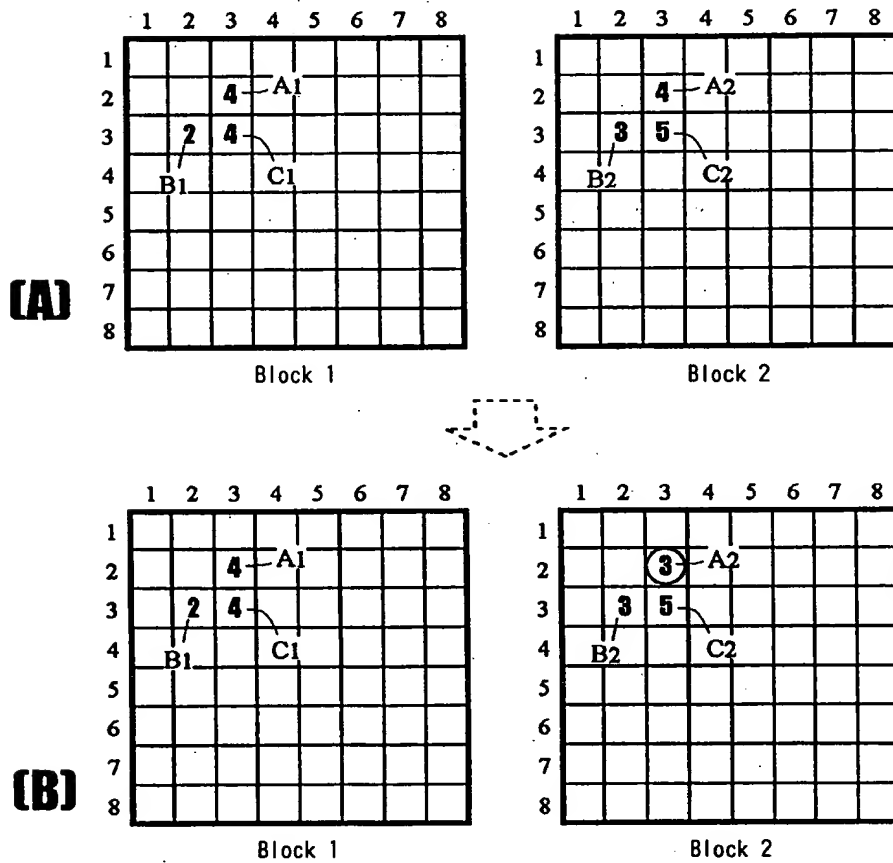


Fig. 13

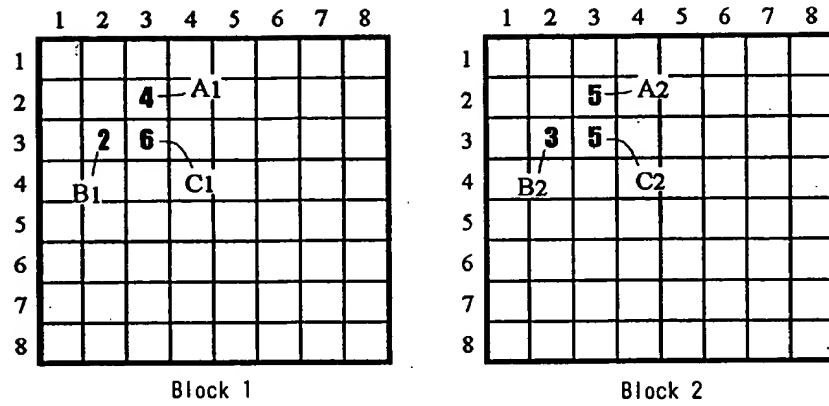


Fig. 14

DCT block pair No.	Block 1 coefficient			Block 2 coefficient			Embedding data's bit No. (1~96)	Embedding data allocation
	A1	B1	C1	A2	B2	C2		
1	1	5	2	5	6	3	31	1
2	5	8	9	2	5	5	21	0
3	2	10	9	5	1	2	18	1
4	1	11	5	5	3	20	65	0
5	10	2	25	1	3	24	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
160	5	30	11	6	9	10	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
6144	51	20	11	3	19	15	34	1

Fig. 15

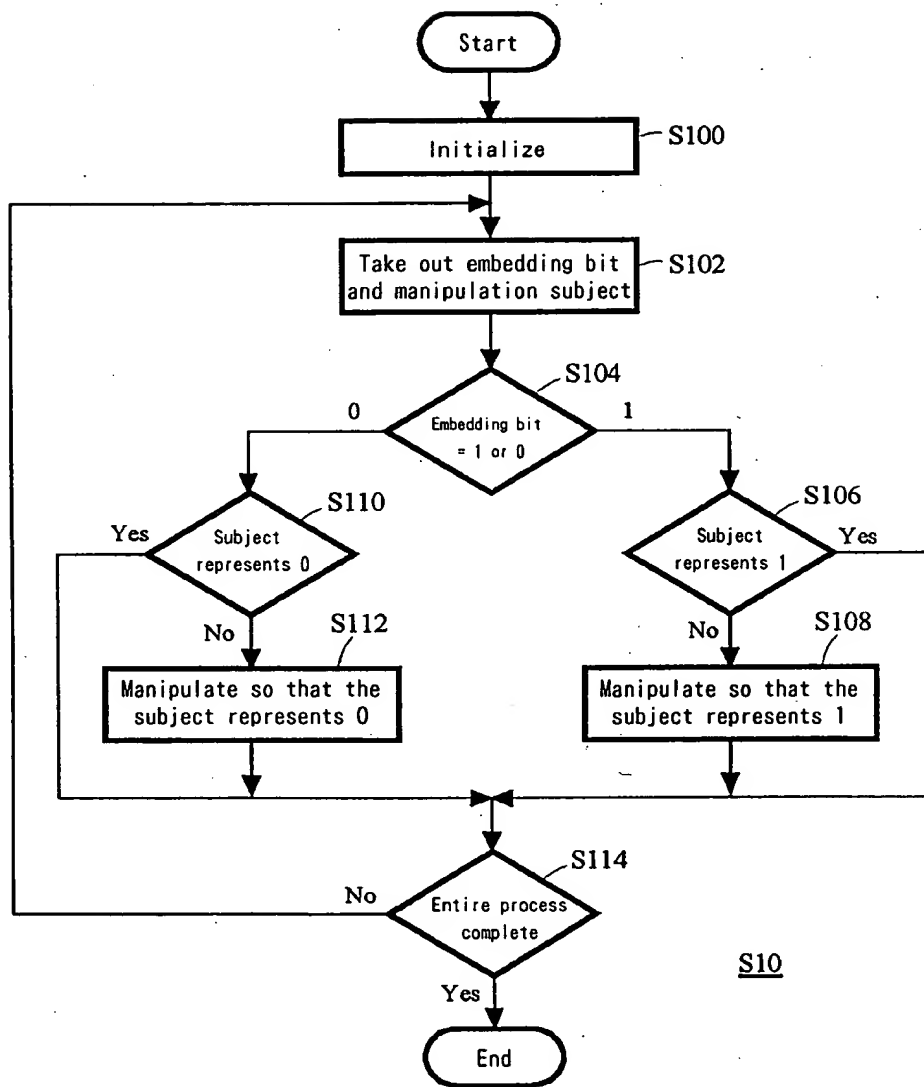


Fig. 16

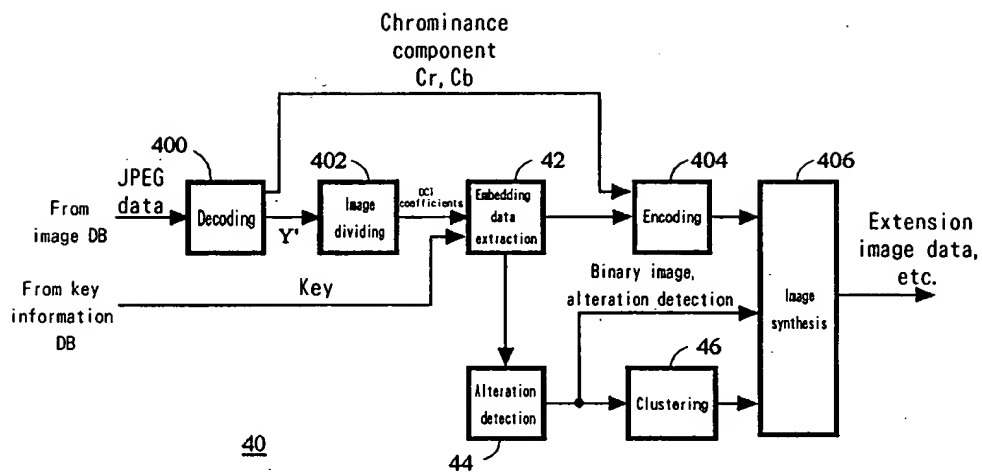


Fig. 17

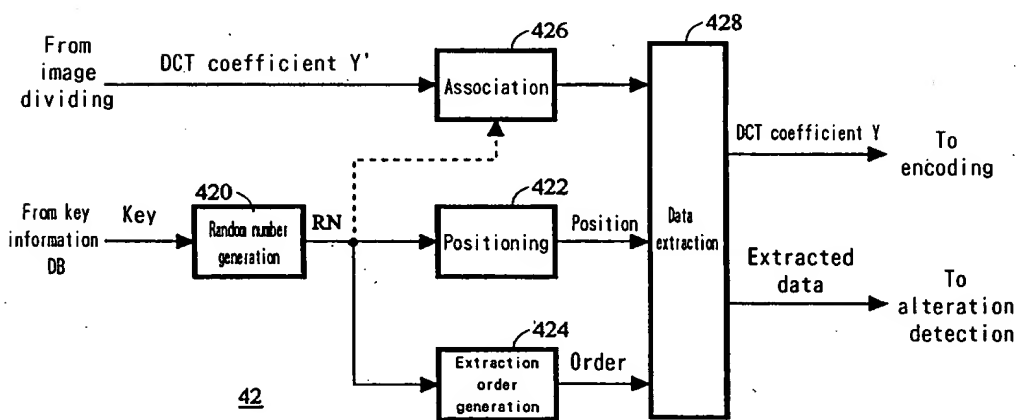
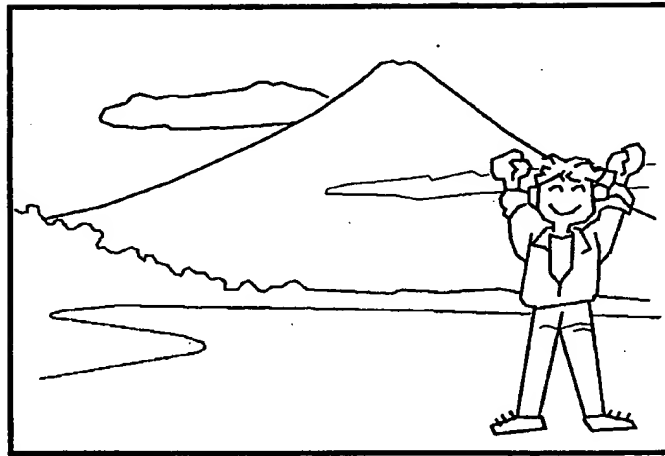
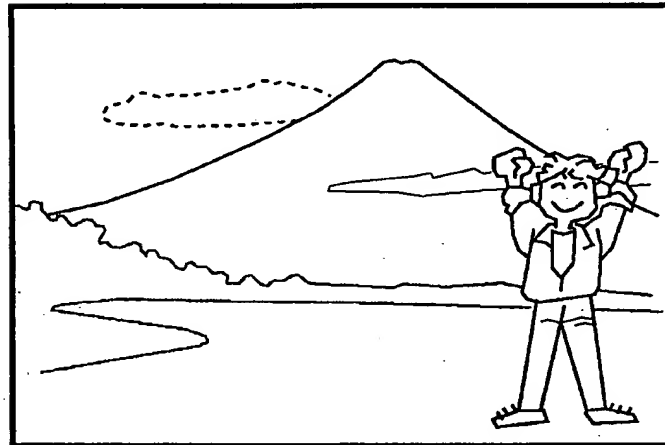


Fig. 18

(A)



(B)



(C)

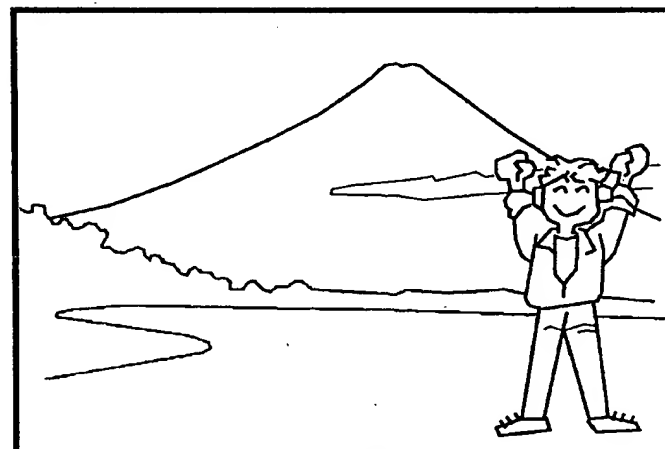


Fig. 19

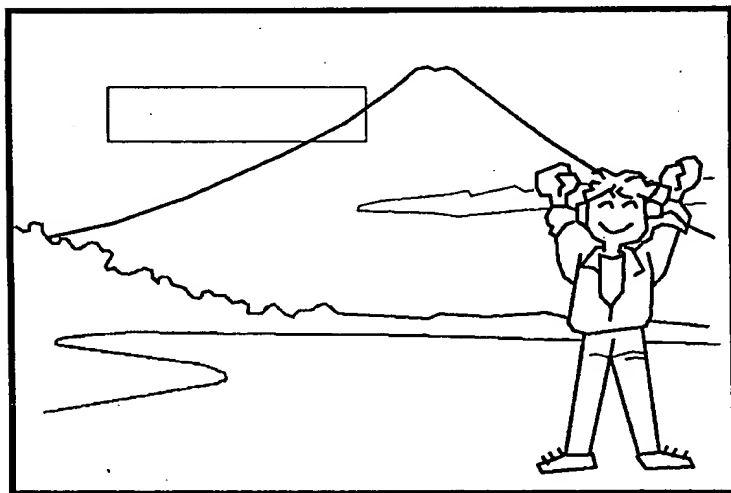


Fig. 21

	1	2	3	4	5		96
Pairs 1-96	Pair 11 1	Pair 5 0	Pair 31 1	Pair 9 1	0	-----	1
Pairs 97-192	Pair 99 1	Pair 126 0	Pair 150 1	Pair 153 1	0	-----	1
Pairs 193-288	1	0	1	1	0	-----	1
Pairs 289-384	1	0	1	1	0	-----	1
⋮	⋮	⋮	⋮	⋮	⋮		⋮
Pairs 6049-6144	1	0	1	0	0	-----	1
Extraction result	1	0	1	1	0	-----	1

Repeat
64 times

Fig. 22

Detected embedding data's bit number

	1	2	3	4	5		96
Pairs 1-96	Block 11 1 _A	Block 5 0 _B	Block 31 1 _A	Block 9 1 _A	0 _B	-----	1 _A
Pairs 97-192	Block 99 1 _A	Block 126 0 _B	Block 150 1 _A	Block 153 1 _A	0 _B	-----	Block 185 0 _B
Pairs 193-288	1 _A	0 _B	1 _A	Block 255 0 _B	0 _B	-----	Block 254 0 _B
Pairs 289-384	1 _A	Block 315 1 _A	1 _A	C	Block 316 1 _A	-----	1 _A
Pairs 385-480	Block 399 0 _B	Block 400 C	1 _A	1 _A	0 _B	-----	1 _A
Pairs 481-576	1 _A	0 _B	1 _A	1 _A	Block 520 1 _A	-----	1 _A
⋮	⋮	⋮	⋮	⋮	⋮		⋮
Extraction result	1	0	1	1	0	-----	1

 Mismatch

Fig. 23

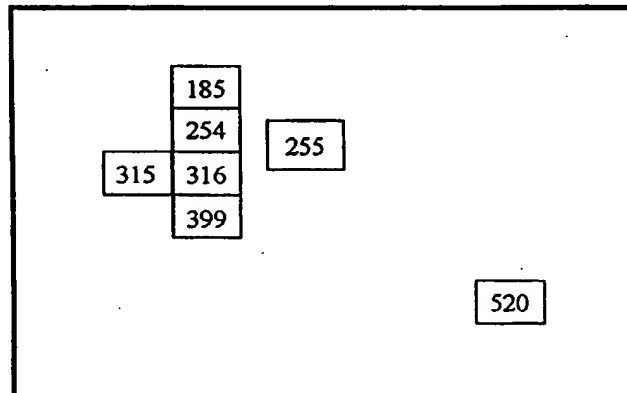
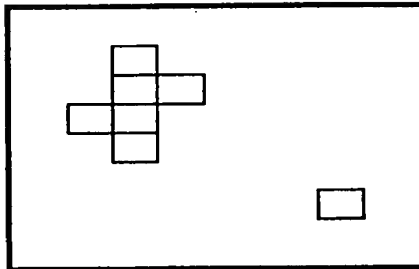
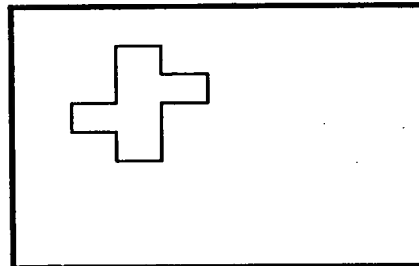


Fig. 24

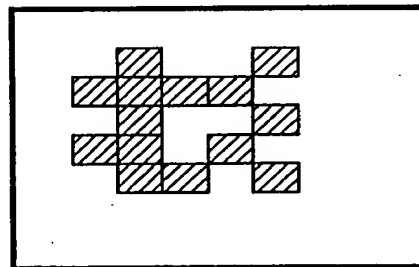
(A)



(B)



(C)



(D)

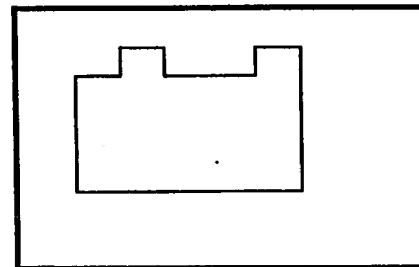


Fig. 25

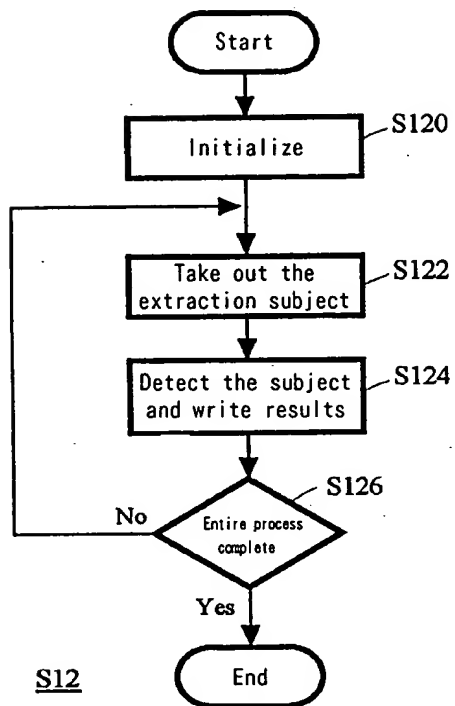


Fig. 26

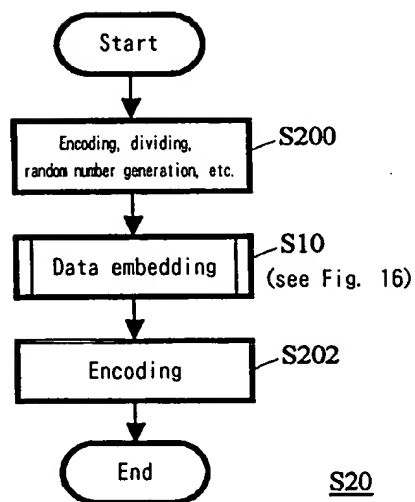


Fig. 27

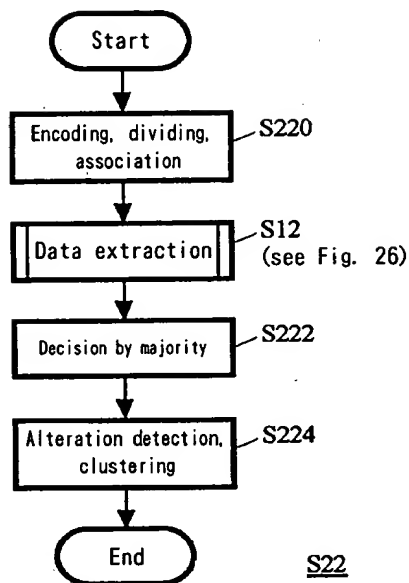


Fig. 28

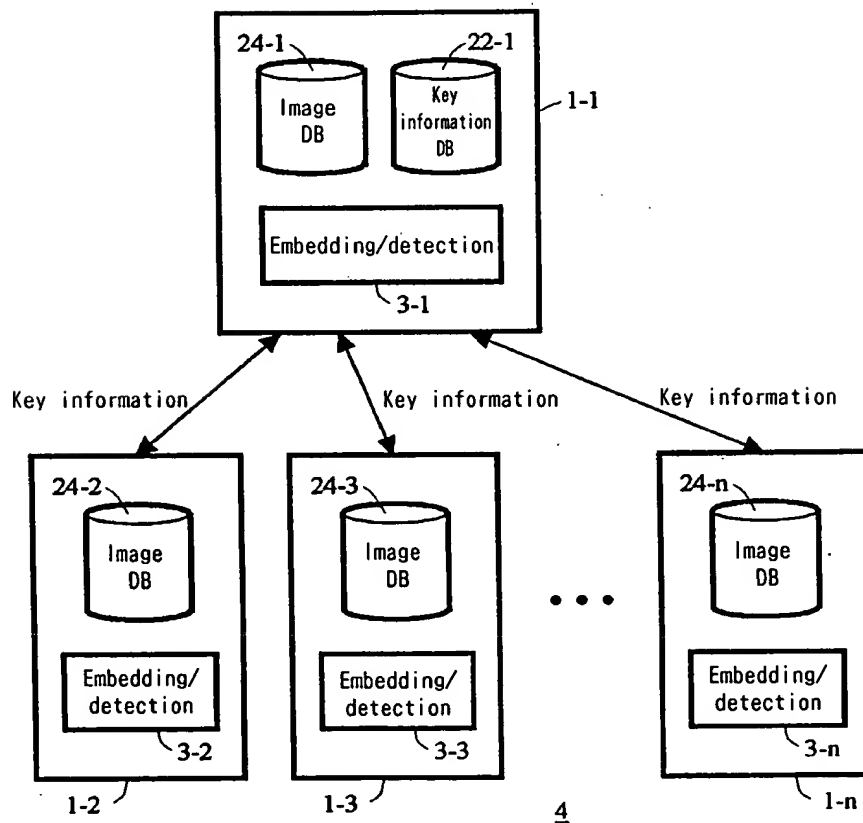


Fig. 29

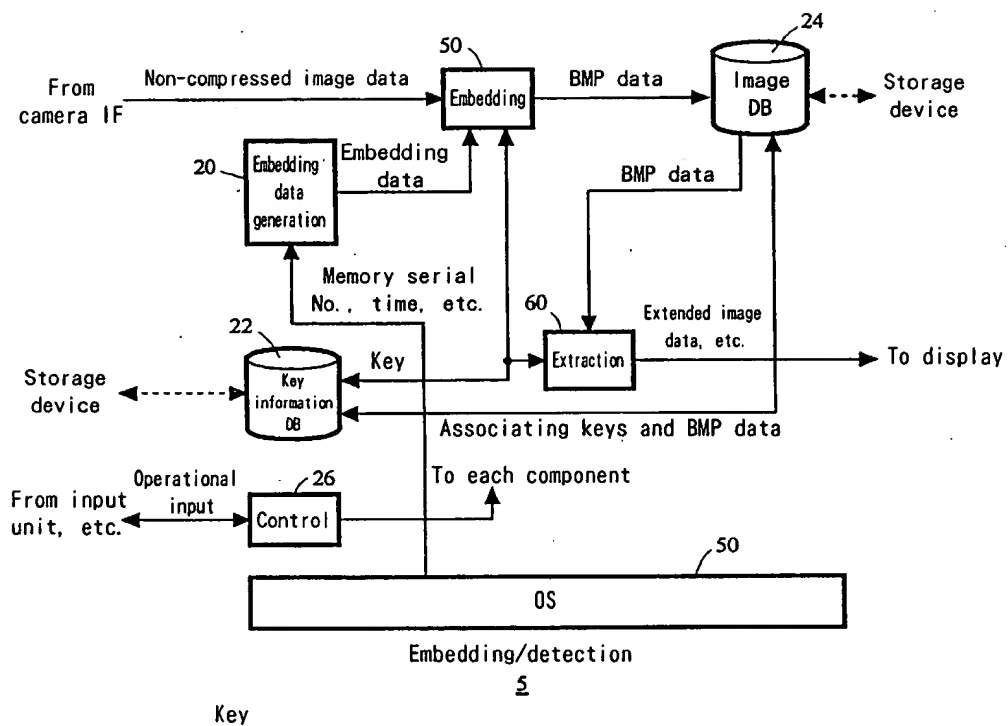


Fig. 30

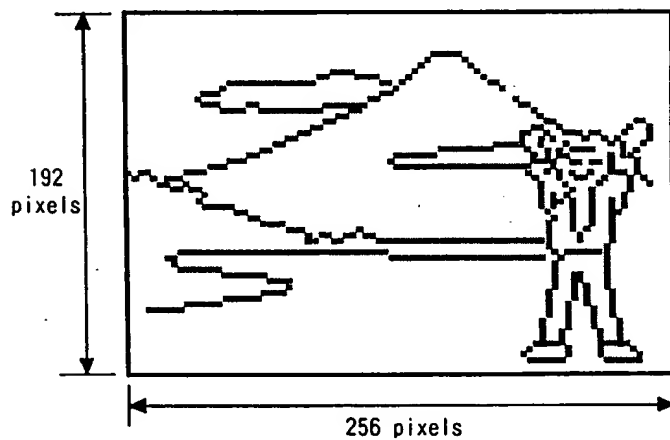


Fig. 31

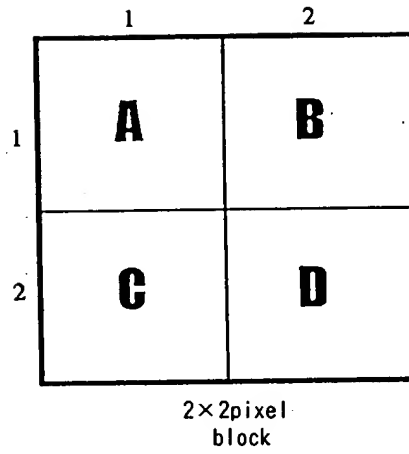


Fig. 32

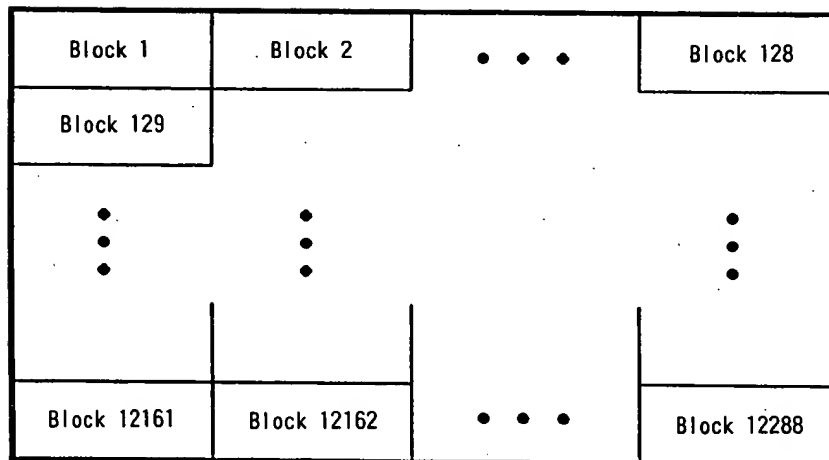


Fig. 33

2×2pixel block No.	2×2pixel block's pixel value				Embedding data's bit No.	Embedding data allocation
	A	B	C	D	(1~96)	
1	1	5	2	5	31	1
2	5	8	9	2	21	0
3	2	10	9	5	18	1
4	1	11	5	5	65	0
5	10	2	25	1	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮
160	5	30	11	6	7	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮
12288	51	20	11	3	34	1

Fig. 34

(A)

	1	2
1	13	52
	A	B
2	164	0
	C	D



(B)

	1	2
1	12	52
	A	B
2	164	0
	C	D

Fig. 35

	1	2
1	166	252
	A	B
2	58	2
	C	D

Fig. 36

002140/2204960

[A]

	1	2
1	21	101
	A	B
2	253	0
	C	D



[B]

	1	2
1	21	101
	A	B
2	253	1
	C	D

Fig. 37

	1	2
1	11	57
	A	B
2	89	121
	C	D

Fig. 38

003740 2/234560

Detected embedding data's bit number

	1	2	3	4	5		96
Blocks 1-96	Block 11 1 _A	Block 5 0 _B	Block 31 1 _A	Block 9 1 _A	0 _B	-----	1 _A
Blocks 97-192	Block 99 1 _A	Block 126 0 _B	Block 150 1 _A	Block 153 1 _A	0 _B	-----	Block 185 0 _B
Blocks 193-288	1 _A	0 _B	1 _A	Block 255 0 _B	0 _B	-----	Block 254 0 _B
Blocks 289-384	1 _A	Block 315 1 _A	1 _A	c	Block 316 1 _A	-----	1 _A
Blocks 385-480	Block 399 0 _B	Block 400 c	1 _A	1 _A	0 _B	-----	1 _A
Pairs 481-576	1 _A	0 _B	1 _A	1 _A	Block 520 1 _A	-----	1 _A
⋮	⋮	⋮	⋮	⋮	⋮		⋮
Extraction result	1	0	1	1	0	-----	1

Repeat 128 times

☐ Mismatch

Fig. 39